

PAWTUXET RIVER RAILROAD BRIDGE
New Haven Railroad over Pawtuxet River
and Wellington Avenue
Cranston
Providence County
Rhode Island

HAER No. RI-44

HAER
RI,
4-CRANS,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

HISTORIC AMERICAN ENGINEERING RECORD

PAWTUXET RIVER RAILROAD BRIDGE

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RI,
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Location: New Haven Railroad over Pawtuxet River and Wellington Avenue
Cranston
Providence County, Rhode Island

USGS Quadrangle: Providence, RI UTM: 19.297950.4625840

Engineer/Architect: not applicable

Fabricator: American Bridge Company

Date of Construction: 1906

Present Owner: National Railroad Passenger Corporation
60 Massachusetts Avenue N.E.
Washington, D.C. 20002

Present Use: active railroad bridge

Significance: Erected in 1906, the single-span, 130-foot Pawtuxet River Railroad Bridge carries both main line tracks of the Amtrak Northeast Corridor over the Pawtuxet River and Wellington Avenue. This riveted, double-intersection Warren through-truss is a massive example of early-twentieth-century bridge engineering and is one of only four fixed, through-truss railroad bridges remaining in Rhode Island.

Project Information: The National Railroad Passenger Corporation (Amtrak), in association with the Federal Railroad Administration (FRA), is proposing a number of infrastructure projects to upgrade the Northeast Corridor Railroad right-of-way in Connecticut, Rhode Island, and Massachusetts. In consultation with the State Historic Preservation Officers (SHPOs), Amtrak and FRA have determined that the proposed "Northeast Corridor Improvement Project - Electrification: New Haven, Connecticut to Boston, Massachusetts" project will have adverse impacts on significant historic properties. Three Memoranda of Agreement outlining stipulations to eliminate, minimize, or mitigate adverse project impacts have been drafted among Amtrak, the FRA, and the respective SHPOs, and accepted by the Advisory Council on Historic Preservation. The stipulations include the recordation of the Pawtuxet River Railroad Bridge to Historic American Engineering Record standards.

The proposed project will necessitate alterations to the portal braces and conversion from an open deck to a ballasted deck. The Pawtuxet River Railroad Bridge is eligible for inclusion in the National Register of Historic Places for its significance as a particularly massive and unaltered example of a Warren truss, a design typical of standardized early-twentieth-century bridge engineering.

The Public Archaeology Laboratory, Inc. (PAL Inc.) of Pawtucket, Rhode Island was retained by ABB Environmental Services, Inc. on behalf of Amtrak and FRA to prepare HAER documentation for the Pawtuxet River Railroad Bridge. The report was compiled in April 1996 by the PAL Inc. project team including Virginia H. Adams, Senior Architectural Historian; Matthew A. Kierstead, Industrial Historian; and Joshua Safdie, Architectural Assistant. The large format photography was completed in March 1996 by Robert Brewster of Warren Jagger Photography, Inc. of Providence, Rhode Island.

Preparers:

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PART I DESCRIPTIVE INFORMATION

The Pawtuxet River Railroad Bridge is located south of the city of Providence in Cranston, Rhode Island on the Warwick town line, at Milepost 179.16 on the Amtrak Northeast Corridor. The bridge spans the Pawtuxet River and Wellington Avenue. The immediate area is bounded by U.S. Route 1 to the east and Interstate Route 95 to the west and is wooded with dispersed modern industrial development.

The Pawtuxet River Railroad bridge is a 130-foot-long, single-span, double-intersection, steel, modified Warren through-truss with sub-struts and is of riveted construction except for pinned joints at the four corner bearing points. The end posts and top and lower chords are of riveted iron girder construction. The main diagonal members, top lateral, sway, and portal bracing, as well as the vertical hips and sub struts, are all constructed of built-up bar lacing and lattice girders. Diagonal and vertical members are connected by prominent polygonal gusset plates. The lower chord is of notably deep floor-beam-and-stringer construction. The bridge is 33 feet wide overall and stands 23 feet above the mean level of the Pawtuxet River. The bridge is double-loaded, carrying both Amtrak Northeast Corridor main line tracks over the Pawtuxet River through a truss with 20.3 feet of interior vertical clearance and 27.5 feet of interior horizontal clearance. The bridge rests directly on mortared, rough-faced, random ashlar granite block abutments with concave, flaring wing walls and does not rest on shims or concrete pads. The inward-facing abutment walls of an earlier bridge at this location were reconstructed to accept the 1906 bridge and are constructed of slightly more smoothly dressed stones. The south abutment is complex in shape, with several stepped levels. Modifications to the bridge are minor and include steel plate repair patches applied in 1959. A small modern utility conduit is mounted on the east side of the lower chord of the bridge (Tait 1995).

PART II HISTORICAL INFORMATION

The Pawtuxet River Railroad Bridge carries the National Railroad Passenger Corporation (Amtrak) Northeast Corridor, a high-speed passenger rail line that connects Boston, Massachusetts to New York City, New York; Baltimore, Maryland; and Washington, D.C. This route originally consisted of several passenger and freight railroads with end-to-end-connections, which were consolidated into the Amtrak system in 1971. The segment of the Northeast Corridor that includes the Pawtuxet River Bridge was originally chartered in 1832 as the Providence and Stonington Railroad. Construction began in 1832, and in 1833 the railroad merged with several new Connecticut and Massachusetts railroads to form the New York, Providence and Boston, or the "Stonington Road". This railroad, along with the Boston and Maine and the Boston and Worcester, was one of the first three major railroads in New England. The Providence to Stonington segment that includes the Pawtuxet River Bridge was surveyed by Major George W. Whistler, noted railroad surveyor and father of the painter James McNeill Whistler. In 1892 the Boston to New York line was included in the growing New York, New Haven and Hartford Railroad (New Haven) system. Through rail connection to New York City was not realized until the Thames River at Groton, Connecticut was finally bridged in 1889 (Karr 1995:124-126).

The "Shoreline," as the route was known under the New Haven, had a very flat grade profile because it took a "water level" route along the shores of Long Island Sound in Connecticut. The disadvantage of this route was the number of creek, estuary, and river crossings. Therefore, bridges were a particularly important part of the New Haven's infrastructure. In 1905, the New Haven implemented

a branch line improvement program in response to increasing size and weight of railroad locomotives and rolling stock. This program included the replacement of an existing iron bridge over the Pawtuxet River at Cranston with the present structure, a contract awarded to the American Bridge Company of Trenton, New Jersey in 1906. The American Bridge Company, a subsidiary of the United States Steel Corporation, was founded in 1900 and rapidly became a dominant steel fabrication concern, absorbing more than half of the nation's steel fabricating capacity (Darnell 1984:85-86).

The Pawtuxet River Bridge is a relatively early and highly intact example of its type. The Pawtuxet River Bridge is one of four fixed, through-truss railroad bridges remaining in the state of Rhode Island. The bridge is somewhat similar in construction to the 1919 Omega Pond Bridge, a lighter, one-track Warren truss railroad bridge that is listed on the National Register of Historic Places (Malone et al. 1993:8-10). This riveted Warren through-truss bridge is a particularly massive example of early-twentieth-century steel truss bridge designs, which typically settled on variations of the Pratt and Warren trusses that emerged as the dominant types from a variety of proprietary nineteenth-century iron and steel bridge designs (Condit 1961:82).

PART III SOURCES OF INFORMATION

A. Plans and Drawings

National Railroad Passenger Corporation Design Department, 30th Street Station, Philadelphia, Pennsylvania.

B. Historic Views

None located

C. Bibliography

Condit, Carl W. American Building Art: The Twentieth Century. New York: Oxford University Press, 1961.

Darnell, Victor. Directory of American Bridge Building Companies 1840-1900. Washington, D.C.: Society for Industrial Archeology, 1984.

Karr, Ronald Dale. The Rail Lines of Southern New England: A Handbook of Railroad History. Pepperell, Massachusetts: Branch Line Press, 1995.

Malone, Petrick, Ed Connors, and Gregory Galer. Omega Pond Railroad Bridge National Register of Historic Places Nomination Form. November 14, 1993.

Tait, Anne. Rhode Island Department of Transportation Historic Bridge Inventory Form for the Pawtuxet River Railroad Bridge. Pawtucket, Rhode Island: The Public Archaeology Laboratory, Inc., 1995.

D. Interviews

None conducted

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Location Map



Source: USGS Quadrangle: Providence, RI